

Notice of Allowability

Application No.

10/727,602

Applicant(s)

TANAKA ET AL.

Examiner

Chun-Kuan (Mike) Lee

Art Unit

2181

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 08/15/2007.
2. ☒ The allowed claim(s) is/are 4, 11, 15 and 19-23.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material

5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


ALFORD KINDRED
PRIMARY EXAMINER

DETAILED ACTION

I. INFORMATION CONCERNING OATH/DECLARATION

Oath/Declaration

1. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in **37 C.F.R. 1.63**.

II. INFORMATION CONCERNING DRAWINGS

Drawings

2. The applicant's drawings submitted are acceptable for examination purposes.

III. EXAMINER'S AMENDMENTS

OPTIONS AVAILABLE TO THE APPLICANT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by **37 CFR § 1.312**. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

AUTHORIZATION FOR THE CORRECTIONS BY THE EXAMINER

4. Authorization for this examiner's amendment was given in a telephone interview with Yukiko Maekawa, having Reg. No. 50,307, on August 31, 2007. Accordingly, since a complete record of the interview has been incorporated in the instant examiner's

amendment, no separate interview summary form is included in the instant office letter
MPEP § 713.04.

CORRECTIONS MADE IN THE APPLICATION

The application has been amended as following:

IN THE CLAIMS:

The below described amendments to the claims are necessary to further clarify the claimed invention.

In claim 4, lines 24-29, "...said second virtual machine sends to said control program a command to deactivate or activate said first virtual machine upon detecting occurrence of an error in said first virtual machine, and said control program deactivates or activates said first virtual machine..." should be replace with -...said second virtual machine sends to said control program a command to deactivate said first virtual machine upon detecting occurrence of an error in said first virtual machine and sends to said control program a command to activate said first virtual machine after said first virtual machine is repaired, and said control program deactivates and activates said first virtual machine...-.

In claim 4, lines 31-35, "...connection with said I/O device is switched to said first virtual machine according to a control signal received ... and in response to said interruption signal being received by said first virtual machine..." should be replace with -...connection with said I/O device is switched to said second virtual machine according

to a control signal received ... and in response to said interruption signal being received by said second virtual machine...-.

In claim 11, lines 22-26, "...said second virtual machine sends to said control program a command to deactivate or activate said first virtual machine upon detection of occurrence of an error in said first virtual machine, said control program deactivates or activates said first virtual machine..." should be replace with -...said second virtual machine sends to said control program a command to deactivate said first virtual machine upon detection of occurrence of an error in said first virtual machine and sends to said control program a command to activate said first virtual machine after said first virtual machine is repaired, said control program deactivates and activates said first virtual machine...-.

In claim 11, lines 29-33, "...connection with said I/O device is switched to said first virtual machine according to a control signal received ... and in response to said interruption signal being received by said first virtual machine..." should be replace with -...connection with said I/O device is switched to said second virtual machine according to a control signal received ... and in response to said interruption signal being received by said second virtual machine...-.

In claim 15, lines 27-31, "...said second virtual machine sends to said control program a command to deactivate or activate said first virtual machine in response to detection of occurrence of an error in said first virtual machine, said control program deactivates or activates said first virtual machine..." should be replace with -...said second virtual machine sends to said control program a command to deactivate said

first virtual machine in response to detection of occurrence of an error in said first virtual machine and sends to said control program a command to activate said first virtual machine after said first virtual machine is repaired, said control program deactivates and activates said first virtual machine...-.

In claim 15, lines 34-38, "...connection with said I/O device is switched to said first virtual machine according to a control signal received ... and in response to said interruption signal being received by said first virtual machine..." should be replace with -...connection with said I/O device is switched to said second virtual machine according to a control signal received ... and in response to said interruption signal being received by said second virtual machine...-.

IV. DISTINGUISHING FEATURES RECITED IN THE CLAIMS

ALLOWABLE SUBJECT MATTER

Claims 4, 11, 15 and 19-23 are allowed.

The following is an **Examiner's Statement of Reasons for Allowance**, See MPEP 1302.14:

The primary reasons for allowance of claim 4 in the instant application is the combination with the inclusion in the claim that there are "**... I/O device switching means for updating said state of logical connection set by said PCI connection allocating means according to a control signal received from said selected virtual**

machine ... wherein in response to detection of occurrence of an error in said selected virtual machine, said selected virtual machine is deactivated, connection to said I/O device is switched to a standby virtual machine, said standby virtual machine is set as an active virtual machine, and said deactivated virtual machine is repaired and set as a standby virtual machine ... wherein said second virtual machine sends to said control program a command to switch a state of logical connection of said first virtual machine to said I/O device, said second virtual machine sends to said control program a command to deactivate said first virtual machine upon detecting occurrence of an error in said first virtual machine and sends to said control program a command to activate said first virtual machine after said first virtual machine is repaired, and said control program deactivates and activates said first virtual machine with respect to said control program in response to said command being received, wherein said control program includes a PCI connection allocating table, said PCI connection allocating table is changed so that connection with said I/O device is switched to said second virtual machine according to a control signal received, in response to said PCI connection allocating table being changed, said control program generates an interruption signal, and in response to said interruption signal being received by said second virtual machine, said first virtual machine changes connection to said I/O device, and wherein said first virtual machine is rebooted to reconstruct said first virtual machine as a standby machine and a CPU allocation rate of said first virtual machine is set to be low..." The prior art of record including the

disclosures of Stiffler et al. (US Patent 6,622,263) and Pittelkow et al. (US Patent 7,003,688) neither anticipates nor renders obvious the above recited combination. Because claims 19 and 22 depend directly on claim 4, these claims are considered allowable for at least the same reasons noted above.

The primary reasons for allowance of claim 11 in the instant application is the combination with the inclusion in the claim that there are "... signal generating means for generating an interruption signal used to change a state of logical connection of said port according to a control signal received from said computer ... an operating system performing hot-add/remove processing of said I/O device in response to said interruption signal running on said computer; and an allocating means for setting said state of logical connection of said port ... wherein in response to detection of occurrence of an error in a virtual machine, said virtual machine is deactivated, connection to said I/O device is switched to a standby virtual machine, said standby virtual machine is set as an active virtual machine, and said deactivated virtual machine is repaired and set as a standby virtual machine, wherein said signal generating means generates said interruption signal and updates said allocating means for setting said state of logical connection of said port, wherein a second virtual machine sends to said control program a command to switch a state of logical connection of a first virtual machine to said I/O device, said second virtual machine sends to said control program a command to deactivate said first virtual machine upon detection of

occurrence of an error in said first virtual machine and sends to said control program a command to activate said first virtual machine after said first virtual machine is repaired, said control program deactivates and activates said first virtual machine with respect to said control program in response to said command being received, wherein said control program includes a PCI connection allocating table, said PCI connection allocating table is changed so that connection with said I/O device is switched to said second virtual machine according to a control signal received, in response to said PCI connection allocating table being changed, said control program generates an interruption signal, and in response to said interruption signal being received by said second virtual machine, said first virtual machine changes connection to said I/O device, and wherein said first virtual machine is rebooted to reconstruct said first virtual machine as a standby machine and a CPU allocation rate of said first virtual machine is set to be low..." The prior art of record including the disclosures of Stiffler et al. (US Patent 6,622,263), Pittelkow et al. (US Patent 7,003,688) and "Computer Input/Output" neither anticipates nor renders obvious the above recited combination. Because claim 20 depends directly on claim 11, claim 20 is considered allowable for at least the same reasons noted above.

The primary reasons for allowance of claim 15 in the instant application is the combination with the inclusion in the claim that there are "... changing said state of logical connection between said port and said selected virtual machine according

to a control signal received from said selected virtual machine; in response to detection of occurrence of an error in said selected virtual machine, deactivating said selected virtual machine; then, switching connection to said I/O device to a standby virtual machine; setting said standby virtual machine as an active virtual machine; and repairing said deactivated virtual machine, and setting the repaired deactivated virtual machine as a standby virtual machine ... wherein said step of changing said state of logical connection includes the steps of, when detecting error occurrence in any of said plurality of virtual machines, updating an allocation table for setting a state of logical connection between said port and each virtual machine, letting said error-detected virtual machine stand by and activating another virtual machine, wherein said second virtual machine sends to said control program a command to switch a state of logical connection of said first virtual machine to said I/O device, said second virtual machine sends to said control program a command to deactivate said first virtual machine in response to detection of occurrence of an error in said first virtual machine and sends to said control program a command to activate said first virtual machine after said first virtual machine is repaired, said control program deactivates and activates said first virtual machine with respect to said control program in response to said command being received, wherein said control program includes a PCI connection allocating table, said PCI connection allocating table is changed so that connection with said I/O device is switched to said second virtual machine according to a control signal received, in response to said PCI connection

allocating table being changed, said control program generates an interruption signal, and in response to said interruption signal being received by said second virtual machine, said first virtual machine changes connection to said I/O device, and wherein said first virtual machine is rebooted to reconstruct said first virtual machine as a standby machine and a CPU allocation rate of said first virtual machine is set to be low..." The prior art of record including the disclosures of Stiffler et al. (US Patent 6,622,263) and Pittelkow et al. (US Patent 7,003,688) neither anticipates nor renders obvious the above recited combination. Because claims 21 and 23 depend directly/indirectly on claim 15, these claims are considered allowable for at least the same reasons noted above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

V. CLOSING COMMENTS

Conclusion

DIRECTION OF FUTURE CORRESPONDENCES

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Kuan (Mike) Lee whose telephone number is (571) 272-0671. The examiner can normally be reached on 8AM to 5PM.

IMPORTANT NOTE

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alford Kindred can be reached on (571) 272-4037. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

September 10, 2007

Chun-Kuan (Mike) Lee
Examiner
Art Unit 2181



ALFORD KINDRED
PRIMARY EXAMINER